1K179

Aug 19 - Sept 16
1971

BRASIL -

Rio de Janeiro —

Minas gerais - Corumba

Manaus

Correio do Brasil
5 CTS.
ANITA GARIBALDI

August 18 1971

Raked hay for about an hour or so. Packed. Big lunch about 1 PM. Dick Lee arrived shortly before 2. Left home for Logan airport about 2:15. Plane left on time.

At Kennedy no help with the baggage and finally struggled over to Varig and checked in about 5:15. Airport in great confusion.

Varig flight left on time from New York. Excellent food and service. All night flight — 9 and a half hours non stop. Plane a Boeing 707.

Had chance to go up into cockpit and talk with the crew. He took position and marked it on my airline map — about 600 miles east of Virgin islands at the time. Crossed equator in the wee hours about 100 miles east of mouth of the Amazon. Very smooth flight except for some rough air over about lat. 18° or 19°

Began to become light over some mountainous country probably

about east of Belo Horizonte. Landed in Rio in blazing early morning sun - about 7:45. got through customs fairly easily and signed in at the Gloria Hotel shortly after 8:30.

Trip from airport about 45 minutes through incredible traffic. Although the coast line here is spectacular and the Rio harbor and Bay area is a most beautiful setting the noise and confusion are about standard for all large cities I've seen in the world. Perhaps they drive a bit faster here than anywhere I've seen except Mexico City and Tokyo.

Estimated to bed about 11 AM Aug 19

Later

awoke several times but did not get up and dress until after dark - gets dark here about 6 PM

August 20 (Hotel Gloria - Rio)

Late start. Made contact with Joe Talbert in afternoon. He leaves Rio tonight at 7 PM for Chile. Most helpful and introduced us to his staff and wrote some notes of introduction for our visit to São Paulo. He personally took us over to see Lew Price and his group who were also most cordial. Got us the latest geol. map of So. Amer.

The best procedure seems to be to 1) visit of São Paulo at the Geosciences Lab and at the Instituto Politechnica especially to see Prof. Almeida if he has returned from USSR.

2) Return to Rio and arrange for trip to Corumbá if this is possible. Go to Corumba + return to Rio

3) Visit Belo Horizonte area and

It seems necessary to ship all specimens collected to Price and leave in his hands to do

all possible to get material out to U.S.

All material to be shipped and cleared must be by official auspices — no exceptions and all work in field must be done in company of a Brazilian national!

Avid The differences between Spanish and Portuguese must frustrating + confusing

Taxi fares are very low in Rio

Weather ideal - low 90's day mid 50's night

August 21 (Hotel Gloria Rio)

Day of relaxation. Walk along Flamenga Beach A.M. and to the Jardim Botanica in afternoon. (Taxi only Cr 5.00)

The garden supports an astonishing number of truly tropical plants – i.e. rain forest species among its stated 7000 species. The Aroid collection is especially good – also Palms of S.E. Asia. Is fairly well kept up and clean – also quite large, far larger than I had expected. Some spectacular vistas of the surrounding mountains at west end of park.

Hotel Terminus
São Paulo

Aug 22 71

Left Rio via VASP at 5:30P
Clear sky - considerable smog
way inland from city - flight over
water clear air.

Rugged coast line islands and
headlands. Most of flight path
is due west. Crossed coast over
rugged mountain country south
of the Tiete River (a large
river). Mountains heavily
forested.

São Paulo on a late
Sunday afternoon reminds one
of New York on a week day -
Traffic endless. Got to hotel
from airport at 5:20
Weather ideal - warmer and
drier than Rio was today
when we left at 3:30.

There is a plane every hour
all day and well into the
night every day of the week
between Rio & São Paulo.

* Baggage is searched before
boarding plane in Rio

D_2. H

Hotel Terminus
São Paulo

Aug 23 71

To the Instituto geociencias y Astronomia. Mendes was at a meeting but were welcomed by Dr Umberto Cordani who speaks English well and who has spent a good bit of time in the States. Says there are no radiometric dates on the Corumbé ore deposits which are currently being mined for manganese by Companhia Meridional (U.S. Steel affiliate) Cordani took us to the Escuela Politechnica where we were received by Dr Eduardo Damasceno. Prof. Almeida was not locatable but had been in this AM.

Lunch at a huge barbecue place at edge of Cidade Universitaria.

After lunch (2:45) spent over two hours with Prof. Camargo Mendes, director. A cordial and informative visit over many aspects of the geology of Brazil. [He is not yet convinced of continental drift].

Send C[14] specimens to

Dr Umberto Cordani
Geochronology laboratory
Instituto de Geociencias e
Astronomia
Cidade Universitaria
São Paulo, S.P. Brazil

Send reprint to
Prof. Almeida &
" Mendes

Send annotated notes
with 10 topics for lectures
to Prof. Mendes

English sparrows are common
around here -

Hotel Terminus
São Paulo

Aug 24

Up at 7. Appointment with Prof. almeida at 9 at the Escola Politecnica Very cordial and most informative info re the Corumba area which he knows better probably than any one else geologically.

Dr Cordani took us through the geochronometrical laboratories and showed us the K-Ar, Rb-Sr and brand new and not yet operating C^{14} benzene scintillation counter. The glass blowing is crude and the instruments strictly hand made except for the electronics which are all U.S. imports.

Visited again with Comargo Mander later in the morning. He took us to lunch at a cafeteria time

Shopping at Stern's on the Av. Iparanga. Bought emerald for J. M. and bracelet and spoon ($4,08 cr$) U.S currency

Lynn Margulis called this afternoon and arranged to meet in Terminus lobby at 7 PM Went to the restaurant on the 46th floor of the Edefica

Terraco Italia restaurant.

coco con camarãos =
tender young coconut - sweet, filled with sauce and shrimps (have never seen this dish before). The coconut endocarp is hard, partially liquified but pericarp still quite immature — the meat of the coconut soft. The milk is used as part of the sauce (cream sauce) for the shrimps. A most exotic dish.

Weather perfect. Warm + sunny until late afternoon →

Aug 24 (contd)

Italia - one of the tallest and most bizarre buildings in São Paulo. The restaurant is plush, food excellent and prices high - although not exhorbitant. View of city superb even at night. There is a walk all around the top, restaurant, floor outside the glassed in interior. Beautifully furnished in panelled wood and excellently appointed - Queen Elizabeth has been there!

Weather suddenly changed to-day. Quite warm and sunny until late afternoon when wind set in from southeast and low clouds came over. Some "garua" weather to-night. Reminds me of the garua on the coast of Peru many years ago.

All in all a productive day but am getting a bit weary of hotel living

Interesting procedure in São Paulo is, before boarding plane to have baggage inspected, passport shown and then to be bodily felt for firearms.

Hotel Florida.
Rio de Janeiro
Rua Ferreira
Vianna

Aug 25

Left ~~Rio~~ S. P on 1 PM flight for Rio. Arrived on time - weather good.

Called Octavio. He obliging & introduced us downtown (corner of Rio Branco and Rua Buenos Aires (Rua Buenos Aires 68 24°A to Eng. Waldo F. Gribel of Cia Meridional de Mineracão

After presenting my plans and intentions he kindly offered to radio telephone the operators there (another company get =

)

and make contact for us. However Octavio thought it might be more efficient and better if we go to Minas Geraes first and then to Corumbá after return.

Llewelyn Preiz

Ministerio das Minas e Energia
Divisão de Geologia e Mineralogia
Avenida Pasteur 404
Praia Vermelha, Rio de J.

July 13 - ~~1320~~

Sysit 230
Plast 120

August 10 (Cambridge)

Sysital 158
90

Aug 26

Sysit 130
diast. 80

Hotel Florida
Rio

Aug 26 - Thursday

Visited Price Thurs AM. Went over Haus. Bowman came in later had lunch with him. He has been authorized to go with us to Belo Horizonte area for a few + days. Will meet him Thurs on Monday at Hotel Normandy.

Octavio phoned tonight but was unable to ~~see~~ return his call (

Price had one of the Maternity physicians here take my blood pressure. He seemed to know what he was doing and his sphygmo - seemed new. Readings were taken 3 times

sist	130
diast	80

Hans decided to cut back a bit on the aldactazide and take 1 every 3 days and only three aldomit per day. This should be a better balance - have felt a little light headed a few times this week.

Cannot ship mixed items by parcel post from Brazil — They do not participate in the Int. Postal Service. Must declare in personal presence — takes one week or more Printed matter up to 1 Kilo no problem — at P.O.

Hotel Florida
Rio

Aug. 27.

Tried again to return Ontario call but no success. Went to see Arca again. Dick went out to the Museo Nacional and Zoological Gardens.

Apparently things are in order for our trip to Corumba - a Cia Meridional man will be with us and transportation O.K. Hope so. Hard to believe things can be that efficient. Apparently Eng. Gribel radiophoned as he said he would.

Ontario message was only about phone numbers in Belo - so no important [illegible] will be with us.

Left Hotel after a chocolate bar lunch at 2.20 - about 20 minutes to Museo. Spent nearly two hours on exhibits.

Most exhibits are antiquated but some new + good ones esp. on Zoology. Saw no botanical exhibits - but there may be some.

Brazil Indian exhibits are interesting but all antiquated

Rained hard Thy AM +
mostly cloudy all day. A
bit more rain about 5 PM

More rain about 8 PM
and again 11 - 12 PM.

Aug 27 (cont'd)

and obviously there is no interest at least as far as can be seen in any effort to update them or bring the plight of the Indians before the public.

The museum occupies a commanding position in an almost Versailles-like setting. Too bad they didn't put the botanical garden here.

No time for the Zoo

On the way back went book hunting in centre. The best general book store seems to be Kasmos, but there are many others nearby.

This section based to outer — very narrow streets and excellent shops — the whole somewhat reminiscent of parts of Kyoto.

Dinner again at the Arbenia restaurant

Lynn Marquis arrived at Hotel Florida about 9:30. She had reservations here but tried to go on to N.Y. but could not except 1st class. ca $100 more each plus $.

Dan & M.

Rained off & on all day - some bright sun about noon but not enough to dry socks or underwear.

Had severe chills about 7 or 8 this A.M. Much gas & felt "heated" all day - no fever, however.

1 liter 2 Rhum Negrito (French patent made in San Pauls), supposed to be among the best cost 3.50. Horrible Pinga cost 2.50 per bottle - This is a very strong ~~rum~~ rum-like drink but with a curious taste unlike anything I've ever tasted. Figure to take a bottle home with her. The ~~rum~~ drink (we made with it over 1/3 pinga and 2/3 pineapple juice (suco abacaxi) (abacaxi in Portuguese & piña in Spanish) - a good mix.

Hotel Florida

August 28

Up late. Decided to stay in Rio instead of going to Belo Horizonte early today (last flight out today 10:30 AM).

Flight to Belo confirmed for 11:30 AM tomorrow.

Lunch at the Amazonia — steak tough — fruit tough steak yet. Pieces about usual in the Caribe Flamengo area.

Went to ~~Corcovado~~ Corcovado by auto about 3:20 — taxi 2:35 up cog rail. Clouds, fog and cold. Christ occasionally appears & at the top — but high in fog. The christ is over 100 feet tall. For what reason would they decorate a mountain this way? (710 meters at cog railway stop — 230 ± steps more.

Reminded me of the dismal day on Fuji — cold and rain and clouds. Could see almost nothing. Got chilled again.

Tyman left hotel at 8:50 for N.Y. flight — Varig — Paid bill tonight — Cruzeiros no service charge & 10%

Street vendor Dick Leo purchased for me a clinical Thermometer —:

Temp @ 1: PM = 37.5°C

= 99.5

@ 2:30 37.25°C

@ 3:30 36.8°C

@ 5:00 36.9°C

@ 8:50 36.75

There is a 25 story parking garage across the Church plaza — all level — cars are taken up by ~~high~~ high speed elevator

Hotel Normandy
~~Minas Gerais~~
Belo Horizonte

August 29

Left Santos Dumont airport at 10 AM for Belo Horizonte via Ponte? arkans. Flight took just under an hour. The city about 8 miles to down-town. Checked in at Hotel about 11:30. Excellent hotel - clean + well furnished room - double bed + pipes in water. The city is spread out. Good view from the 14th floor. Feel very tired, suspect I'm running a slight temperature. Took two aspirin and a valium pill at 12 noon.

Weather in Rio excellent - some cumulus but bright sun. Ft cloudy (cumulus) to Belo. Very dry, clear and sunny here with pleasant temperature. Very dry compared to Rio - ie rel. hum.

Beds have a heavy wool blanket as part of make up.

This seems like a vibrant, prosperous and pleasant city - hard to believe it is 1 million ± population

(My) Temp @ 8:30 AM

37.6° C

Weather —

quite cool last night and this A.M. clear sky in morning — pt cldy with heavy billed cumulus this afternoon — some showers nearby around the great bend — like valley here.

after sundown feels very chilly

Hotel Normandy
Belo Horizonte

Aug 30 1971

Slept about 11 hours last night - feel much better but still groggy.

Dr Sommer arrived about 11 45. Went to arrange transportation for field trip.

This afternoon about 2 30 our vehicle came + went to the district office (Third District) The Departamento Nacional da Producão Mineral of the Ministerio das Minas e Energia Avenida de Contorno 6 897) Met the present director who has offered to "fill in" while the present active director is in the field - Dr Djalma Guimaraes - who is actually retired but available - he is about 70 yrs very pleasant person and communicative. He offered really little hope of finding black shale or any sedimentary phased rocks in the whole area except for the Bambuí series which he thinks is "ordovician". There are really no good dates on the Bambuí series, at least one will see some rocks to-morrow - the sedimentary

phosed Bambui about 2 hours drive from here.

Visited the geology Dept of the University of Minas Gerais. Rather pathetically antiquated and under-nourished aspect of the University it is obvious. The new campus at Cidade Universaria is quite splendid but the science are not there. This seems to be typical of most of this country as far as I've observed - São Paulo seems to be the only partial exception.

- As far as I can see this city has absolutely no slums or "ghetto" areas - in fact it seems remarkably free from any sign of real poverty and in general looks very clean and well ordered. The downtown is prosperous looking, modern and well stocked with tall buildings up to over 25 stories or more. The shops are well stocked and well "groomed".

37.3° at 6 AM
Felt much better today - no more readings

Tonnage production at the Iron smelter Peterangue
Cia Siderurgica de Peterangui
daily 25t metric tons
monthly 7000 " "
cast pig iron = [illegible]

1 Open hearth furnace con-
tinuous production furnace
shut down 1/month
910 x mix =

200 - 220 kg limestone
3 1/2 cu meters charcoal
1000 kg ore

↓

pig iron

1. old furnace - tapped 8
times per day.

24 hour production

Hotel Normandy
Belo Horizonte

Aug 31, 1971

Up at 6 AM. Left Belo about 7 30. Sao Paulo highway (divided) to turn off to Uberaba - paved for 102 kilometers where turned off for Petinguí. Went directly to the iron smelter plant at (or near) Petinguí. A curious totally manual operation ? accompanying smelting ? iron from local ore, local limestone (Barbacena black limestone) and charcoal - no coal) Beat me movies & 35 mm pictures for description

Our hosts at the Siderurgica Petinguí were very friendly & helpful - treated us to a large meal about noon and guided us all afternoon.

Iron formation here is all highly metamorphosed or hydrothermally altered - complex system of Pre-t faults. Some graphitic phyllitic rocks however - prob. lower grade than graphite schist

Vegetation all human controlled except a few small spots of something resembling the probable original forest cover. Cutting & burning agriculture

Wea Ther very good.

Temp 8:45 AM 38.4°

9.30 " 38.2

10:30 " 38.0

11:00 " 38.0.

12:00 " 37.8 +

only Soup for dinner 8:00 PM 37.8

10:30 PM 37.8 +

* Worst meal have had in Brazil was in Itabira - a dirty restaurant that Sommers old friend Kay (Danish origin, former now retired (78) English teacher at the College took us to)

Hotel Normandy
Belo Horizonte

Sept 1, 1971

Chills again last night ~~as~~ or sometime very early A.M. Doubled blankets up. Quite feverish feeling when got up about 8:45. Juice and fruit only for breakfast.

Friedrich Sommers did not appear until noon. Car + driver ready at 9. Stayed in room most of the morning.

Changed to field clothes and left about 12:30 for Itabira. 2 hr drive on good roads. Itabira is a town of ca 20-25 thousand. CVRD is the biggest mining operation here. Got clearance to visit the operations. The company is well organized, has apparently lots of capital and is highly mechanized. The ore here is ageem. a highly metamorphosed shist - Itabirite grade 60-65%. Reserves are huge and they are well organized to tear down this mountain of ore - Cauê Peak from which they have already stripped off about 430 feet of the mountain already and are busily tearing out the sides. Have 100 ton load trucks - have 30 of them. (Made in Tulsa, Oklahoma) monumental contraptions against which a man

looks very puny. called by Trade name LE-CTRA - Power??
Drove for miles over the descending mountain - all one movement is downslope and it will be a long time to destroy this entire mountain. Present leveled off summit is 1300? miles.

Back to Belo Horizonte at 8 o'clock.

Vegetation similar to yesterday except probably more over cut! However There a some few areas of forest near Itabira including tree ferns!

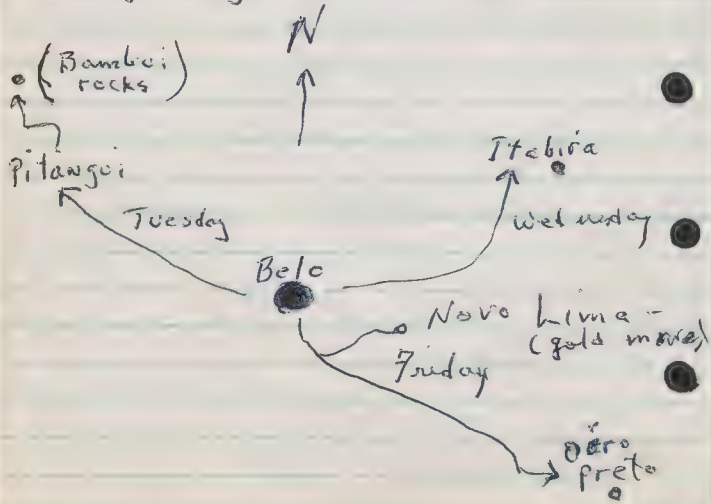
Weather perfect.

9:30 A.M. Temp = 37° C

Normal

Mild thunderstorm over Ouro Preto about 3:30. Light rain — much more to NW as evident from wet fields. I suspect very little rain convert this country into a mass of mud. Most of the weathering is extremely deep — all that is left is colored Al_2O_3 or equivalents.

Quartzite → white. Look superficially like bauxite



Hotel Normandy
Belo Horizonte

Sept. 2, 1971

Asked for an extra blanket last night + sweat during the night and awoke with normal temperature - also feel back to old self. What a relief to get rid of the persistent fever - more than five days of it since that miserable trip up the Corcovado in Rio.

Left Belo H. at 10:20 on road to Ouro Preto. Same car same driver.

How fortunate to have Dr. Sommer as guide, introducer and interpreter and to have the travel all taken care of by the Brazilian Geological Survey!

Road to Ouro Preto goes over highlands with beautiful scenery? The Serros (Iron mountains here are all around. Ouro Pr. is a curious and picturesque small city. Toured the University with Professor as host. Mineral collections quite extraordinary - The public [redacted] part of the University is limited to the Museum of Mineralogy - a quite unusual university plan - small but unusual - open court yards and closed perspective of buildings. Took us up

A primitive method all through this area very primitive cutting burning. Even no contour planting of such crops as maize

to the astronomical observatory - 6" reflector. All dusty! But an exceptional view of city and mountains from up here.

The University is an old fundation dating back to days of the colony - ca 17 - ? The scientific establishment of the University goes back to mid 18 - a French geologist + — G. -

His ~~bones~~ ashes are preserved here in a casket (very small coffin shaped type of urn - here - 12 suitably displayed with an ever burning candle) The whole effect is strange. The founder - the French scientist - has a whole area of the upper floor adjacent to the mineral collection in memory - including letters to + from him ca 1882 - 1883 re appointment of his successor Barbosa who was sent to France for his training as Engineer. Also exhibit of scientific instruments ca 1880 -

On way back stopped at Nova Lima - the gold mining town still active. Formerly since 1842 - ca 1940's a British Company - sold out to Brazil in 1940's. Started by a

wealthy British family of name of Chalmers.

Sommers worked in that manner when he was a young man from Austria back in the 1920's. He is an interesting personality both personally and professionally - an all round naturalist but quite self-effacing in his curious way. Must have had an interesting and I suspect somewhat stormy youth. In this country, however, he has made himself well esteemed - a Professor (formerly at the Univ of and is a member of the Academy of Sciences of Brazil.

In brief retrospect I find that the past four days are by far the most enjoyable and memorable since the landing here at Rio. During the past four days have seen many hundreds of miles of the country - felt the rocks & the plants and have been "in touch" with what a country and its substance is all about - which means getting away from the cities

Salve atque vale Belo Horizonte and Minas Geraes

Weather – excellent in Belo – pt cldy & warm sun
Cloudy and some drizzle in Rio

Hotel Novo Mundo
Rio

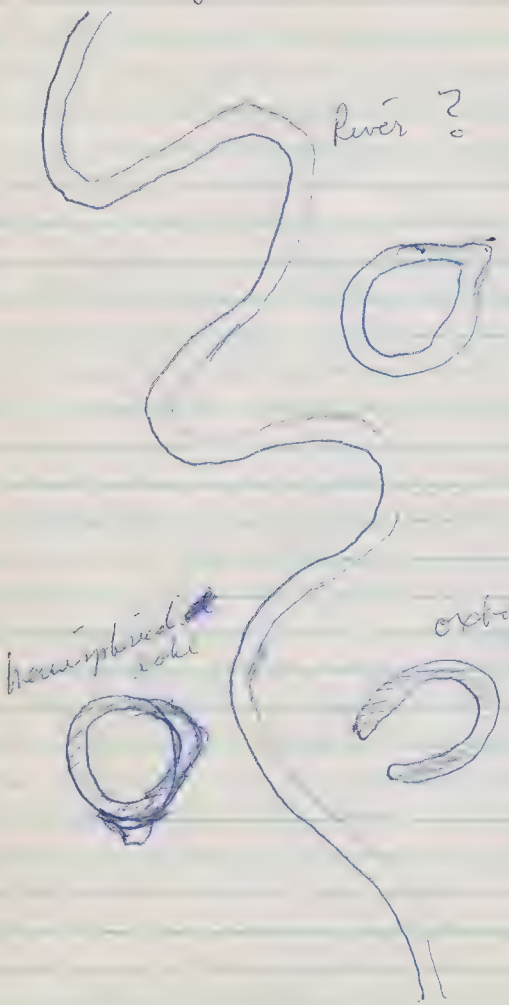
Sept 3

Airport at 10 for 10:30 flight, but no plane. Sommer came with us and Raimonde drove us over in the Department vehicle. Two hour delay - left at 12:30 arrived Rio about 2 and checked in two rooms OK and reasonable.

Went to Price. He had checked with Gribel about letter of introduction in Corumba. Two letters from D were with Victoria at Talbert's office - walked over for them. Then to Gribel town - town. He was pleasant enough Then to Cruzeir airlines and on Rio Branco - 128. To hotel by 6 o'clock. Everything went off OK despite the delay this AM. Plane tomorrow at 9:30 AM to Corumbá.

Plane equipment = Nanuca PT-SIA

Vue de sortie - en route
Campo Grande - Corumbá



Hotel Santa Monica
Corumbá, Brazil

Sept 4, 1971

Left Rio at 9:30 AM. São Paulo stop at 10.55 – 11:20. Vast [illegible] hundreds of miles over cultivated areas alternate pasture land + crop land. Soils highly variegated in color. Fairly clear but increasing pollution as we went west. Crossed Rio Paraná about 1:10 - 1.15 – getting hazier + hazier. Haze very perplexing until I finally discovered cause – simply burning of vegetation for spring planting. There are thousands of cubic miles of smoke here. The combination of human fire smoke and subcontinental pollutant we crossed produces our 1st astronomical smog. At the present time – 1:30 at an estimated altitude of 22 - 25 000 feet ground features are almost obliterated even when viewed directly below. This must be one of the world's biggest smoke smudges.

Stopped at Campo Grande for about ½ hour. Left there 2:35. Vegetation varies from tall grass where pastured to almost barren terra rosa. Very flat. Trees in some areas along water courses. Approach to Corumbá very gradual up +

at Campo Grande -
Flat as Texas and hot

Corumba -
Hot and dry - est. 92° F
but extremely dry air.

* No sign of Indians or
Indian miscegeny in the
population here

down Paraguay River. A wild jumble of fluvial features - what look as though ripples sand from the height. Some haze, somewhat dense but not greatly.

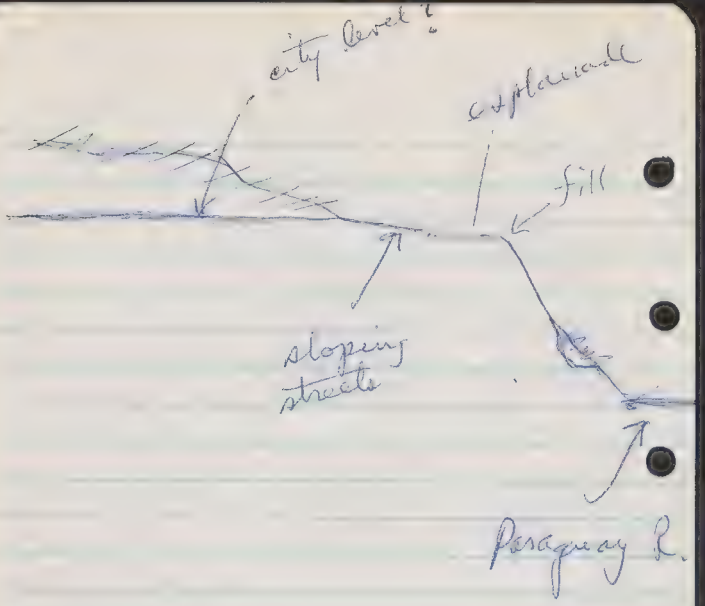
This is probably the greatest pall of smoke haze yet standing on the earths surface — where else could one find it. Even the last unburned or incompletely burned over areas of the earth. This is something on the order of which I would never have dreamed.

No wonder the Indians are long gone and the campesinos push on.

Hard to know just how remote one is flying over vast areas at high altitude but I suspect one could easily be 50 miles from a village in a good bit of the country between Campo Grande and here.

Corumba is a remote but quite sophisticated center of civilization. Put up at Hotel Monica — a 6-7 story quite modern building - one of the taller in town. Even have air conditioning & Wifi.

This city is located in an extraordinary position - on high


city level
Esplanade
Fill
sloping streets
Paraguay R.

land above the Passaic River which is a marvel of gigantic meanders. Difficult to draw a section of city which is on one of a large number of large bends of the river

High temps today prob. 92°

Footing = Futing.

Social custom in small Brazilian towns & cities - word derived from English. Consists of parading up & down - boys & girls in search of partners - a sort of pairing off procedure under the guise of just "footing" up & down! & nite invocations but probably quite effective. As far as I could see no money in either committed or involved. altogether a prim custom and open to all manner of selection factors of choice

Hotel Santa Monica
Corumbá

5
Sept 1971

A lazy day. Up at 11
Weather hot & sunny.
After lunch took walk along
esplanade and through town
and Park.
Still don't understand how
this city can be on the east
bank of the Paraguay River
the way the river obviously
flows.
The big bridge across the
Canal fell down
yesterday — what a strange
change — all rubble on
left — i.e. South side now
too bad I did not take
pictures yesterday afternoon
— what a photographic gem
it would have been — an
unique event in history!
The town. They were planning
to make a bridge of the old
structure.
Called Dr Chamma 2 PM
(Oswald Chamma of
Sobrami — tel. 28-28, Rua
Delamare, Corumba). No
answer. Tried again at 4 —
answer. He suggested (poor

Weather mostly clear - very warm - ca 90° + and very dry. Uncomfortably hot in sun & risk to strong NW winds

Brush fires huge to W NW - Smoke billowing thousands of feet in air on other side of river in the Pantanal

~~Sept 6, 1971~~

Feed Bagby became ? language problem) that he come over to Hotel at 7:30. Waited for him one hour and was about to leave for dinner when he arrived - with a young man who spoke quite good English - Rode around in Chamness' car + got acquainted - around Corumbá and over to Ladario. Made plans for tomorrow. Will pick us up at hotel about 8 o'clock.

Big fair in town park - got there too late to see it.

Town folded up quickly about 10:30 or earlier

Weather —

Warm and pleasant in town this A.M. also at mine — in fact quite warm.

Surprisingly warm even on the very top of Mount Chevaux at about 2 PM. Some clouds at 1st developed about 11:30 – 12.30 A few drops of rain about 1:30.

On top of Chevaux the wind was very strong from west

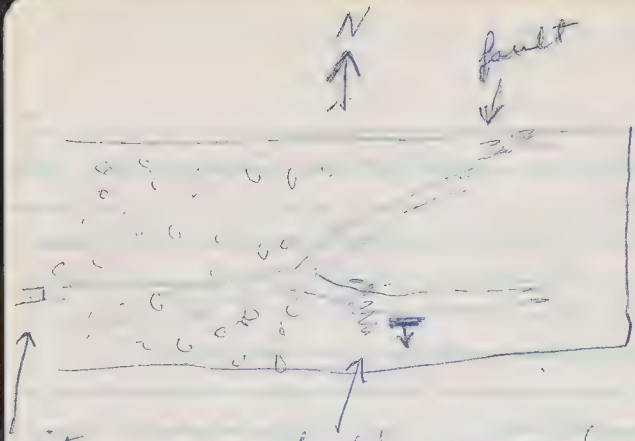
Hotel Santa Monica
Corumba

Sept 6, 1971

Up at 7. Chauffeur was late - telephoned to effect. Came at about 9. Rambling wreck of a car which he made clear he did not favor - company car

Had tire blow-out on way to Jacadic - about 3 km s.e. of Corumba. Chauffeur went for telephone, we waited in hot sun. 15 or 20 minutes later a company car from a nearby iron smelter (pig iron only) arrived & we were driven there. About 10 minutes later Chauffeur's wife drove up in their own car. She a charming and quite handsome woman - spoke a few hesitant words of English which she had learned in school in Corumba as a child (don't see how she could remember a word of it - must be + 35.

Chauffeur drove us up to the Sobrasil office on Cheesman. Met the mine engineer - Eng Jacinto - - Neto, who was very obliging - showed us maps of the mine - a one adit forked to two adits about



They provided brand new boots for the mine. My size is 42!

SOBRAMIL produces 10% of all brazilian Manganese ore

500 meters in. Mining is pillar and gallery - good sized pillars? Rock fough - no or little roof shale (which is tight banded hematite (Band d'Alta); No roof bolting. Gentle dip (ca 12°) so mine essentially a flat adit with stopes up on all sides but then mostly quite level. Ore body (Manganese) about 3 or 4 meters thick, no fan roof.

Machinery etc - Mina Uruguay
Diesel train (one locomotive with 6 - 7 cars)

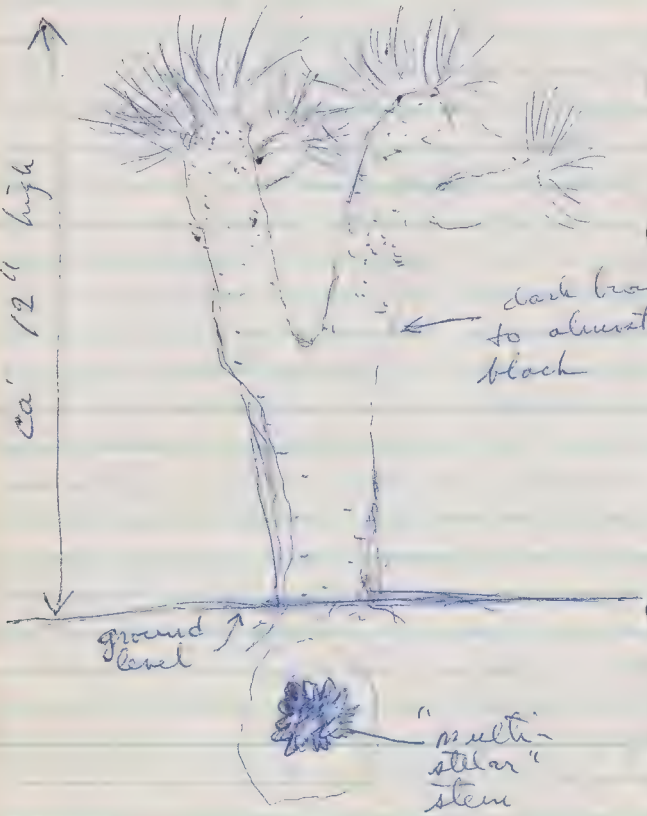
Pneumatic air line 8" with taps for pneumatic drills 18 lbs pressure
Electric power for other uses such as Crushing and washing
16 miners per adit per shift - 5 hour day

Hoisting - 40 - 45% Mgn.

depth of entry = 1243 meters

Eng. Jacinto - Nice took us to lunch - The three of us at

densely tufted, bright green very fine wiry grape-like leaves



a company quality - The table was set for three only - and after a brief relaxation went back down to the Sobraind field office - staff of 8-10? - and he introduced us to our guide for rest of afternoon - a bright and obliging and good humored young man of 20+ who piloted us around in a small company Jeep (Rural in Brazil) Took us first to outcrop of the MN ore bed on road, then to exposure of Band Alta. Then up a very new and somewhat incredible road recently hacked out of the side of Urucum mountain (The road must be very new as judged by the erosion gullies, cement work and absence of plants on sides)

At the top of the mountain (800 meters) are 4 huge parabolic ( ) reflectors enclosing 4 large megaphone-like auditors connected by electric cable to a receiving center. This is the radio-telephone system of the western Mato Grosso. The radar-

like "antennae" are pointed in 4 directions of N, E, S and SE for all of Brazil. Could not be used or jammed from any other direction!

Quite warm on mountain top, although a 35-40 mile wind was blowing.

Down to valley. Visited outcrop of the basal granite - a vaqueira local took us to it after a search. A small but very significant outcrop remnant of a pink-green gneiss (granite gneiss?). Sampled = U-916/5

Then to dolomite exposure along railroad cut (Estrada Ferro Brazil-Bolivia). Bocaina dolomite. Looked in vain for siliceous nodules or carbonaceous units. Near dark and returned to Corumbá.

A cold SW wind set in after dark - heavy overcast tonight - no sign of the moon

Hotel Santa Monica
Corumba

Sept 7, 1971

Last night about 10:45 Dick discovered a note under his door announcing that Jacinto had called and there would be a car for us at 7AM, signed by Oswaldo Chamma.

Up at 6.30 and waited 'til 8 when Jacinto drove up.

Collected some of the blackish limestone exposed along river bluff between Corumba and Ladario, about 1/4 mile up stream from the manganese stockpile beds. The rocks are thin to massive beds, relatively flat lying and quite dark. There are no chert units or nodules in the entire section exposed here. This is the Tamenga Formation of Almeida.

Drove over to Port Aurora to see the Cenozoic ~~Xaraies~~ Xaraies Formation which are well exposed along the right bank of Tamenga Canal beyond the military check post.

The Xaraies beds are maroon to greenish fine grained with some mudstones in

curious rolls and folds. The whole formation is absolutely vertical! What the contact relations are between it and the presumably Tamenga formations are a complete mystery to me. There is no evidence of a diapiric structure. Thickness of the beds I didn't measure but at least 100 feet are clearly exposed and all clearly conformable and vertical. A few fossil leaves have been described from the Xaraés sediments.

This is the turning point of this trip and nothing has been found that I came for — no black cherts. The only success was in locating the granite on Fazenda Urucum.

All the rocks collected in this area are now at the Sobrame office at Urucum and Jacinto will ship them to Rio — to DNPM — att L. Price.

Cold this AM — heavy overcast after about 12 noon

Brazil is probably without doubt the wealthiest backward country in the world. Resources are huge (probably not, though, in either fossil or nuclear fuels) Potentially renewable resources are incredible but currently being wasted and with little evident concern.

Population growth serious but not yet a problem.

Although an "old" country in terms of exploration and settlement it is an anachronism. How much the Church has to fear on this is a curious yellow cloud. Censorship on all things social is obvious (vide: movie ratings 8 yrs; 14 yrs; 18 yrs etc) But the censorship is far more. Army control is a stultifying influence, but in a country this size and potential it is utterly anachronistic. Except the people know no better. Nor do I see any sign they want to.

One thing that is very carefully swept under the rug is the whole subject of the Indians - extinct or extant.

The big parade celebrating Sept. 7 was the AM - lasted until after lunch. Had lunch at the Barbecue - Churrascaria at Jacinto's invitation. Left him about 2:30. Sorry to say goodbye - he is a very ingenuous and pleasant person - almost so intellectually lonely that he tried so hard to speak his limited English. Jacinto is a good memory of Corumbá and of Brazil.

Hotel Monica
Corumbá

Sept 8.

Today was as mixed up as could be. Yesterday the VASP agent told us their flight to São Paulo was scheduled for 4:30 today & that Cruzeiro do Sul would have to validate our tickets over to them. Did took the tickets down at 8:30 this AM & learned we used for Para. Also flight scheduled was said to be 3:30. Got to airport about 3:20. A plane was ready to go but not to São P. but to Cuiaba (Capital city of the State of Mato Grosso). Was to return at 6:PM and on to S. P. But - flap trouble and landing gear trouble & no plane. Went back to Hotel Monica. Dinner once more at Korin Maki's Churrascaria Rodeio

Plane departure quite uncertain. Cr. do Sul has no flight until Friday A.M.

Hotel Novo Mundo
Rio

Sept 9, 1971

Dick called at 7.35 - plane supposed to leave at 8 AM! Overhead bags. No breakfast + headed to airport - arrived about 7.45 - no plane. Plane appeared about 8:00. Left Cumbica at 8 15. Three stops to São Paulo 1) Campo Grande 2) 3) on the east side of the Rio ~~Paraná~~

Arrived S.P. at 2:35. Flight to Rio via Varig 3 PM. Arrived Rio 3:50. Checked in at Novo Mundo about 4:20. Called Pres - he is in S.P at the Geol. Soc. meetings. Somuncu not in today. Reached Talbert who just returned from São Paulo.

Dinner at Novo Mundo dining room - good service and good meal. The usual beef steak -

Hotel Novo Mundo

Sept 10/71

Went to Price office about 12. Discussed various matters, trip to Corumba and the "fate" of the samples. I think they will finally get here but left all names and addresses essential for it — most important being Jacinto at Urucum. Was given more maps and had good chance to see Sommar before leaving. Mineral collection of Minerais in Minas

Got to Talbot's office about 12:30 Talked till 1 / Lunch at Copacabana — girl restaurant at north end (name ?). Spent until 3:30 talking mostly about Harvard & our families — Gene Talbot is a quite interesting person. Too bad we could not accept his invitation to his home (apt.) for tomorrow.

He had arrangements made for us — Moreno tomorrow & still confirmed for flight by Kanal (CVRD) for 9:45.

Took cab to N. to get out / the Rio Branco — Av. Borges

Rio de J. and
São Paulo are the
worst cities in the world
to sleep.

Cars roar by all hours -
until about 4:30 A.M.
Cycles all night -
Buses until about 3 A.M.

area for cab back to Novo Mundo.

Cesar Tolbert had many interesting observations on Brazil many of which I cannot capture here, but which I can well remember in part

1 AM — Busses and more

2 AM — Busses + noise

3 AM motor cycles + trying to zoom engines — one character in particular

4 AM — when does this place slow down?

This is the noisiest, for constant volume of pure noise of any city I've ever been in — possibly São Paulo.

Unending noise either from cars or cycles (worst

Maria
Lucia

50% (1970 census are
under 20 años

Hotel Novo Mundo

9/11/71

Plane tomorrow – not today.

This country has no appeal – It is probably the largest wasteland – undeveloped and linguistically most constipated country in the world.

Also it has no frontier – the west ends in swamps and the north in the Amazon Basin.

Does have an incredible coast line to the east however

Another wasted day in this place Dick called early this evening and explained that he was at a restaurant around the corner (left) from the Atheena. Had 2 girls with him – one rather attractive. His girl dumpy and with very large upper lip. It seems that he teaches her English and supposedly she teaches him Portuguese. The other girl made a phone call and left, ostensibly to see her aunt in Copacabana. Dick & his girl walked back to Hotel and went upstairs where I finally found him – Maria seemed to be his

main interest and I presume they will be pen pals. Both girls are entering the Univ. of São Paulo.

Weather hot - no rain

Cloudy all the way to Brazilia and beyond for another hour.

Smoke everywhere - up to over 25000 ft. They are doing their best to burn up the whole country

Annex to Hotel Amazonas
Manaus

9/12/71

Left Rio about 9:30 via VASP. Another hurry up and wait day. Up at 6.45 and on breakfast. Airport at 7.20 - Then two hours plus waiting. Stopped at Brasilia for 15 - 20 minutes. Not exactly inspiring part of the world.

Left Brasilia non stop to Manaus. Arrived there about 1:30 after a tiring flight and probably the worst food and drink I have ever tasted on a plane during the past 25 years.

The Amazon rain forest - absolutely incredible. Crossed the Rio Xingu about 1½ hours from touch-down at Manaus. Dry season here but hot - not too humid curiously enough. There is quite a bit of relief to the terrain here as evident from the pattern / tree distribution over the unbroken rain forest - a sort of mosaic effect.

Weather warm, good voyage from east – no rain.

I believe that if I roamed 50 countries Brasil would be about the last one I would ever want to visit again. The country is almost totally devoid of any indigenous "newness".

The greatest mystery, however, is what did they do to the Indians. There is absolutely no sign of Indian blood, art, culture or any evidence that they ever existed.

Annex to - Hotel Amazonas
Manaus

Sept 13/71

The big surprise today was Dick Lee. While I was paying for my ticket for tomorrow's excursion on the Rio Negroke came pelting up in the lobby of the hotel, having just left his new girl waiting for him in his taxi. He was all excited and dashed over to the Annex and rushed back to pay his 70 Cruzeiros for tomorrow's trip. His female looked to be about 35, quite fawny or almost dusky, in a green dress and not at all interested in getting out and meeting me, I was not introduced. Dick dashed back to the cab and I watched it leave and walked out. In a moment he was back and asked if I wanted to go also with him to the beach! Declined. Says he has had a very exciting day and will tell me all about it.

The jockey cap he bought that AM he had wrapped up in blue paper. Shoved it to me - I was mostly burned up. He disappeared and went off in the taxi again. He seems to be woman crazy and I hope he is all right. His essential

Trying to write or even to read in a hotel here in Brazil is a challenge — light is so poor. It is not that they could not do better what with air conditioning and TV but they don't seem to have need for night hour illumination. It seems to be consistent with the general state of ignorance and backwardness of the country.

Have been told on good authority (Friedrich Sommer) that the negros brought to Brasil were about the bottom of the selection for I.Q. and general adjustment. The best went to U.S. and West Indies in the days of Euro-American slave trade. I wonder if this is substantiable?

The total Negro influence in this country is very difficult to estimate even by the most elementary marks of color. How many Portuguese were already "contaminated" by the Moors from North Africa.

On the other hand there is relatively little evidence of negroid anthropometric features like — even in Manaus

Requirement is a woman who can speak English so I guess he is in good hands.

Have finally found a solution to this mess called Brasil!

Move all the Brasilians to Mozambique, Angola and Fernando Po and replace them with English, Germans, Swedes and Americans - also some Greeks, Spanish, Italians and Japanese. Exchange ratio about 10 Brazilians to 1 other. With this infusion of brains the place could become a paradise of organization, controlled production and sustained economy plus retention of the "more beings destroyed" natural beauty of the country.

It may be that the worst single obstacle to this country as the problem I have is attached to the Portuguese language. Portugal was in a state of decline well before Spain collapsed in 1585. So whence came the Brasilians.

Hotel Amazonas
Manaus

Sept 14, 1971

Up at 6:30 for the trip by boat on the Rio Negro. Dick appeared about 6:50 & we ate a great state about being late. He went off to the hotel & then I around about 7:10, while a large number of persons were assembled who generally disappeared somehow. No Dick. He appeared a few minutes later from the elevator whence he had been upstairs looking for cigarettes. We were the last of the group and were walked personally by the hotel porter to the dock where we finally got aboard about 7:30.

The launch started upstream for about a mile or so, apparently following a circuitous "dead reckoning" course to a small boat & my dock further on. [The Rio Negro here is more a gigantic flowing lake than a river] At this point after some confusion we were signalled to turn back with a small boat. It was so obviously over-loaded, I held back and another one brought alongside and two persons who had

Weather – hot & humid
but a breeze

No rain – cumulus to
cumulo nimbus

Ground here in Illawarra
very dry.

Rowan & I got in. It was a different situation. There was a front guide, and one "native" pilot - clearly a rowed arrangement. But I figured to go in to that obviously overloaded first boat (two paddles, one paddle - one 6 HP Johnson motor and about 18 people there about on a very thwart with 4 extra at the front) so got in by ourselves with the two ("Ace & the [illegible] Farmer) sat on a after thwart and had a very quiet trip till we approached difficult places and followed a different route from the over loaded boat (which had a free board of probably 2-3 inches at best - in fact I have never seen a more overloaded boat except under emergency conditions.)

Up the narrow swift stream. Stops at "so called native" houses on high & dry piles when the river is up another 15 or 20 feet. They are awash.

It was obvious that the tourism arrangement was to

stop at the auberge, most "native-looking" place, we came along the way we passed without recognition some comparable, well cared for and well painted places - also up on the river bank but well above the high level.

A weird paradox here - this soggy countryside has little although [illegible] typically rich weathered but [illegible] forest and horning herds of cattle (scrawny looking) and some also scrawny horses.

Where the forest has been pretty well destroyed they have left a few large (150 + ft) trees - for what reason is not clear.

I Dick had my Leica camera when we got repacked - we've pictures - hope the movies come out.

About 11:30 - and I was utterly fed up with this French couple who would not even speak to me despite overtures on my part - even their babbling bad French would was more polite - I was about

No insects except

beginning to feel the heat, but more the desire to get back to the boat - Coucher

Having paddled gorgeous many many miles in tropical fresh water swamps. Nice was little new about it except -

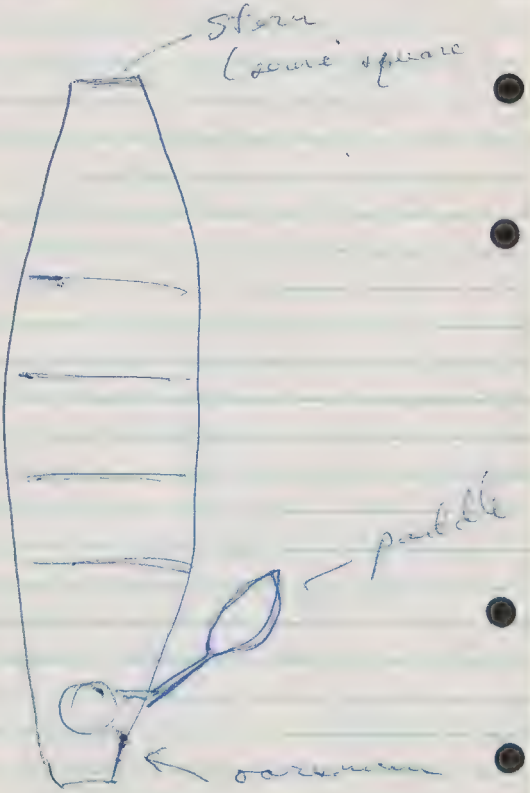
Surprise:

Huge areas of grass-sedge Eichornia stretching for miles - a floating miasmic map of square miles of what is neither land nor water but only a vast choking of attached but floating plant life. Channels obviously cleared for the tours. Would have been utterly impossible to get through here on any self oriented new passage. These plants (grass sedge) had stems about 1" thick)

End of circuit was at a colony of badly chewed up plants (victoria regina)

We guide pulled up a leave of these quite fantastic plants to show us. The waffle (underside purple) structure of the lower sur-

Piraña —
small girls round out
to meet



always down by the
bow!

endosymbiotes and vascular tissue. The plants were not flowering but am not sure whether this colony was not planted here for the sake of the tours. No other doubt it because of the problem of getting here — i.e. the logistics of making this the turn around.

About this point — near noon and with the sun directly overhead and no water for over 3 or more hours I was about ready to accept a survival attitude — but not the French couple who were still apparently gung-ho on their first experience in an equatorial Miasma.

Finally started back. I put water on my head from over side — felt warm to the touch.

The the worst — back to the river, but on the way and still in the endless floating mat swamp — I heard the familiar sound of a

No rain

shear pin broke. The boat-swain - who was very agile pulled the motor up above aboard instantly and almost ran the gunwale to take a paddle (The only one!) He steered us by some instinctive means to the edge of a large tree (probably standing in 60 feet (water) and proceeded to dismount our motor. New pin

The shear pin replacement took about 20 minutes. It consisted of the same operation I've seen many times in Panama - i.e. using a 60 penny nail for a shear pin, but this time it was different. Without plier and with a very dull △ file he tried to take the head off the nail by alternately hammering and (first felling) and again hammering on all hard surfaces - all wood - the outboard or gunwale. Without, there and with no hammer except the end of a spark plug wrench for a hammer he finally detached the nail head, fitted it in and then, after putting back the

No rain

screen, fixed the motor.

Somehow it kicked over — very faintly but then worked.

All this was done with the business end of the whole operation hanging over the side — if we or he had dropped a thing I might still be there.

Meanwhile the French couple and their guide kept up a dein in voluble conversation (She was getting a bit tired of the whole thing I suspect. As for me — said no word. Seldom in my life have I ever been so thoroughly rebuffed and in what is essentially a totally un manner by word as by this — usually the French who mistakenly think that their language is world wide respond to a foreigners overtures. But not these.

The worst, but [illegible] was yet to come as this comedy pas-a-trois ground [illegible] the wields of the "jungle tour".

The [illegible] then, taking the stove, paddled us for endless rounds of minutes through a

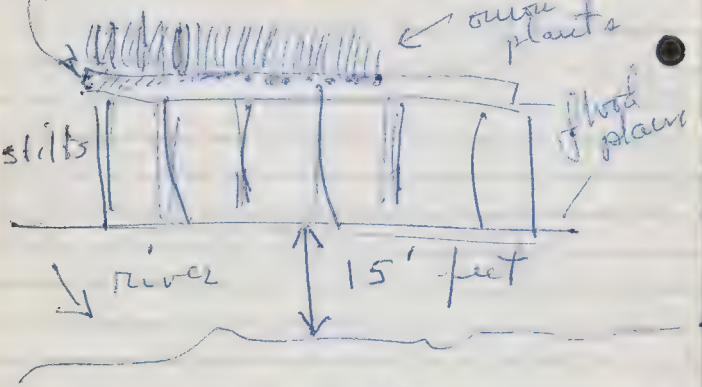
ONITH Culture on

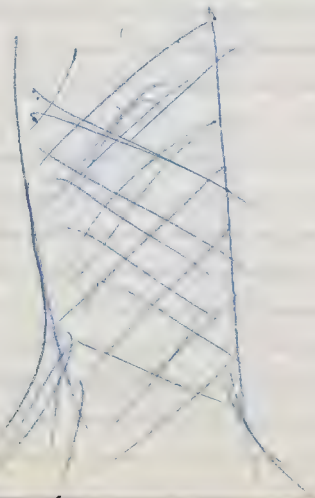
No rain - all day beautiful clear, hot + humid

Onion beds on the lower

→ Rio Negro

3"-4" river mud soil only!





Miasmic swamp, not / grass - sedge mat, but trees - (The way was obviously blazed as I could see by machete cuts) but a totally stagnant forest swamp with trees / many genera standing many feet in water (stagnant) the surface covered with pollen, flowers + leaves - in fact so stagnant that the boats prow made the current flow fore stern.

Mosquitoes here for a while vicious - dark, almost black and large. Many bites.

In the midst of this mess the French babbling guide had to explain the ways + habits of the common beasties (maybe several species) of the Amazonian rain forest to the French couple who just were a bit jaded although he kept popping away with his 35 mm camera in the most minimum light.

About 12 45 finally got back to the launch. After

Guaraná

[redacted] —

Drink made from ?.
Widely used in Amazonas
as a refreshing tonic —
— differs from cola drinks
but has (to me) a aerwise
after-taste

The Rivers of the Earth
are

a launch which I scarcely ate we started down the Rio Negro to the classic meeting of the Rio Negro and the Rio Solimoes (which is usually mapped as the Amazon.

A great display of incredible phenomena in the geochemistry of the earth are here before our eyes

1- The two largest rivers of the earth, very different in chemistry and origin and drainage patterns merge in a wild swirl of both color and texture.

The Rio Negro - dark & totally lacking in visible sediment load merges with a huge mass of minutely particulate yellowish water which rolls up in almost ghostly swirls -

This is a fantastic sight which I have for many years heard - The meeting

Dicks a dream he met on Mars + tells that the Indios are now down from a former

2×10^6 to

5×10^3 remaining people.

In Brazil

The Black Waters and The White —

The waters are not "black" and are not "white" but the union of these two gigantic rivers is certainly one of the wonders of the earth — and forever they will be

I really don't believe that human intervention will ever succeed in messing up this hydrologic phenomenon of the Earth with any measure of exploitation.

They can strip the Amazon Basin of its 1600 million years but the rest and the remnant will continue to draw off the water from the Inter-tropical Convergence of the planetary system which hangs back + forth here at the whim of the Sun.

The Equatorial Forest!

Yesterday I was well convinced that we really live at the whim of the Sun.

Seldom in my life have I ever felt so isolated on my own resources as yesterday.

No shade
No water
Sedge - grass mat with floating evenness to the eyes limit
Overhead sun
Water ca 90° F
and no way to go.

If I wanted to get the only paddle where would I go??

Hope never been so utterly lost.

Because I never got myself in my own way in the same place
→ Best to pilot, in part

Sept 15, 1971

Left Manaus Airport at 2:50 on Varig #808 - 727 - to Caracas + Miami

Then Hal had Café and lunch with Dick at 12:30. Airport at 1:30. Mess at airport with semi-hippie trying to carry over weight baggage (= Bagagem in Portuguese). Arguments about extra fare etc.

Finally started to line before the usual weapon-frisking standard for Brasil.

Then the Ugly American and his incident about his knife. A man in his late 60's or early 70's - he raised a hog wallow bellow at the airport and was almost struck down by an attendant who had had enough of his bellowing about his receipt. I want a receipt. Left Manaus at departure. Somehow he got aboard.

Knives are no problem in Brasil — put them in toilet items in suit case — or pocket.

All the window dressing in Brasil about inspection yet remains a mystery — in a sense it is a Very curious form / Gremlinology — A sort / semi scope on the psychology of behavior.

Has nothing to do with Airplane hijacking etc etc etc etc.

Airport Hotel
Miami Florida

Sept 16

Arrived ahead of time from Manaus via Caracas, Venezuela.

Just as usual in Brasil we arrived ahead of time in Miami - 9:10.

Customs
Hotel - Airport. Hot + humid outdoors

Boston - NE # 40

Horribly humid + hot in Boston - worse than Manaus.

Cold Air came in about 12:30 AM on Sept 17, 1971

END

J. D. Bernal died yesterday in London
Age = 70.

over

John D.

Bernal was one of England's greatest scientists — too bad he was hooked on The Karl Marx problem.

Probably understandable because he seldom got across The English Channel. So his social and economic views were somehow aborted partly because of his intense absorption in the nuclear holocaust problem.

His Lamont views however led him into a strange oblivion in Western Science.

His characterization & delineation & graphite as a crystal system & carbon should have won him a Nobel (whatever that is) prize. So go it.

Bernal in my estimation was one of the great minds of the century

$\frac{1}{2}$ 33 4

$\frac{1}{2}$ 14

2 8 9
2.5
10 1 1 0 1

$\frac{9}{5}$ 38.4

$\frac{9}{5}$ 1.4 $5\overline{)126}$ 2.5

98.6
+ 2.5
101.1 °F

$°C = \frac{5}{9}(F-32)$

$°F = \frac{9}{5}°C + 32$

38
9
5 | 342
68.4

38.2
9
5 | 343.8
68.76

38.4
9
3456
69.12

$(\frac{9}{5})(38) + 32 = 100.40$

37.5 °C	=	99.50
37.6	=	99.68
37.7	=	99.86
37.8	=	100.04
37.9	=	100.22
38.0 °C	=	100.40° F
38.1		100.58
38.2		100.76° F
38.3		101.94
38.4		101.12° F
38.5		101.30
38.6		101.48
38.7		101.66

.36
=100.76
.36

0.1°C = .18°F

$45 \frac{1}{9}$

$.5\overline{)9.5}$

$9 \div 5$

$\frac{9}{5}$ $5\overline{)45}$ $\overset{9}{}$

$= .9$